MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2016/2017

BDM2384 – DATABASE MANAGEMENT SYSTEMS

(All sections / Groups)

30 MAY 2017
2.30 p.m – 4.30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages (including cover page) with 4 questions only.

2. Attempt ALL FOUR questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answer in the Answer Booklet provided.

Question 1 (25 Marks)

a) Database Design can be modelled using a similar SDLC type approach, referred to as the Database Development Life Cycle (DBLC). Outline the major steps that you would take in setting up a database for a particular enterprise.

(10 Marks)

b) The relational database handles entities, attributes of entities and relationships between entities. Explain the difference between a simple attribute and a composite attribute?

(2.5 Marks)

c) What is a derived attribute and how is it different from a stored attribute?

(2.5 Marks)

d) What is an associative entity? What conditions should exist in order to convert a relationship to an associative entity? Explain with an appropriate example.

(10 Marks)

Question 2 (25 Marks)

Projects, Inc., is an engineering firm with approximately 500 employees. A database is required to keep track of all employees, their skills, projects assigned, and departments worked in. Every employee has a unique number assigned by the firm and is required to store his or her name and date of birth. If an employee is currently married to another employee of Projects, Inc., the date of marriage and who is married to whom must be stored; however, no record of marriage is required if an employee's spouse is not also an employee. Each employee is given a job title (e.g., engineer, secretary, and so on). An employee does only one type of job at any given time, and we only need to retain information for an employee's current job.

There are 11 different departments, each with a unique name. An employee can report to only 1 department. Each department has a phone number. To procure various kinds of equipment, each department deals with many vendors. A vendor typically supplies equipment to many departments. We are required to store the name and address of each vendor and the date of the last meeting between a department and a vendor.

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Many employees can work on a project. An employee can work on many projects (e.g., Southwest Refinery, California Petrochemicals, and so on) but can only be assigned to at most one project in a given city. For each city, we are interested in its state and population. An employee can have many skills (preparing material requisitions, checking drawings, and so on), but she or he may use only a given set of skills on a particular project. (For example, an employee MURPHY may prepare requisitions for the Southwest Refinery project and prepare requisitions as well as check drawings for California Petrochemicals.) Employees use each skill that they possess in at least one project. Each skill is assigned a number, and we must store a short description of each skill. Projects are distinguished by project numbers, and we must store the estimated cost of each project.

Required

a) Identify all of the main entities and their attributes.

(10 Marks)

b) Provide the conceptual model of the data in the form of Entity- Relationship Diagram.

(15 Marks)

Question 3 (25 Marks)

Given the following tables:

SUPPLIER

supplier_no	fName	status	country
S1	A	HIGH	JAPAN
S2	B	LOW	AUSTRALIA
S3	C	MEDIUM	CHINA
S4	D	HIGH	MALAYSIA
S5	E	LOW	AUSTRALIA

SUPPLIER_PART

Supplier_no	Part_no	quantity
S1	P1	0
S1	P2	4
S2	P3	12
S3	P4	6
S4	P3	10

PART

part_no	pName	colour	length
P1	Dining table	White	10
P2	Coffee table	Red	15
P3	File cabinet	Blue	20
P4	Book case	Blue	11
P5	Side table	Green	17

Continued...

a) Identify whether the given tables are in its 3rd Normal Form or not. Justify your answer.

(5 Marks)

b) Write the SQL command to add a new part with part number P6, part name is TV table, brown colour and length is 20

(4 Marks)

c) Due to changes in the manufacturing process, part_no P3 is to be replaced by a new part (with the same number). The new part will be coloured black and will be 2 units longer than the original. What SQL command should be used to change the table?

(4 Marks)

d) The director of marketing is organizing a trip to visit some of his suppliers. In order to minimise costs, however, he will only be visiting countries where there are more than one supplier and their status is High. What SQL query should he use to get the name and country of every supplier for all the countries with two or more suppliers?

(4 Marks)

e) Write the SQL command to find the suppliers' names and their country who supply part P3 in alphabetical order.

(4 Marks)

f) What SQL query will enable the marketing director to find out which suppliers are in the same country as S3?

(4 Marks)

Question 4 (25 Marks)

a) A distributed DBMS manages the distributed database in a manner so that it appears as one single database to users. Explain various business conditions that encourage using distributed databases.

(10 Marks)

b) Compare and discuss the difference between a distributed database and a centralized database.

(5 Marks)

Continued...

c) Over 90 percent of large (Fortune 1000) companies have completed data warehouses or have a warehousing project underway. Explain the major trends that necessitate data warehousing in many organizations today.

(5 Marks)

d) Explain data mining, and its goals towards organization.

(5 Marks)

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